PATENT SPECIFICATION

742,104

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COMPLETE SPECIFICATION

Improvements in or relating to Spray Jets

We, GEO. BRAY & COMPANY LIMITED, a British Company, of Leicester Place, Blackman Lane, Leeds 2, and CHARLES HARRY HUGHF, a British Subject, of 10 Parkland Gardens, Meanwood, Leeds, 6, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to spray jets and has particular although not exclusive reference to jets for spraying fluids, smoke and dust.

An object of the present invention is to provide a jet having a high degree of atomisation and a substantially even distribution.

According to the present invention a spray jet has a first part formed with a swirling chamber having a single central outlet orifice and a second part having at least two inclined passages for directing streams of a substance or fluid to be sprayed obliquely on to the walls of the swirling chamber, the cross sectional area of each passage decreasing towards the swirling chamber, the passages terminating in a groove in the second part, said groove being adjacent the swirling chamber.

As examples of the invention spray jets constructed in accordance therewith will now be described in greater detail with reference to the accompanying drawings of which

Fig. 1 is a cross section through an assembled jet,

Fig. 2 is a plan view of a component of the jet,

Fig. 3 is an underneath view of the same component and

Fig. 4 is a cross section through an alternative embodiment of one part of the jet.

Referring to Fig. 1 of the drawings, the jet comprises two parts 1, 2 contained in a metal socket having a portion 3 screw threaded at 4 and 5 with a knurled cap 6 screwed over the thread 4. The portion 3 of the socket has a chamber 7 of enlarged diameter and whose upper end as seen in the drawing is shaped to receive the part 2 of the jet.

The part 2, shown also in Figs. 2 and 3, is of approximately frusto-conical form with its upper face as seen in Fig. 1 grooved diametrically. The groove 8 which is of V shape cross section does not extend completely across the upper face as can be seen in Fig. 3. The frusto-conical portion of the part 2 has two passages 9 and 10 drilled in it, both of which terminate adjacent the opposite ends of the groove 8. The diameter of each passage decreases as the latter approaches the groove 8 in order to increase the rate of flow through the passage.

As can be seen in Fig. 1 the passages 9 and 10 which are inclined upwardly from apertures in the conical portion and outwardly towards the periphery of the grooved face of the part 2 so that the passages terminate adjacent opposite ends and on opposite sides of the groove 8.

The part 1 has a rounded upper surface as viewed in Fig. 1 and the surface is drilled centrally at 11 to communicate with a cup-like recess or swirling chamber 12 formed in the lower face of the part 1. The cross section of the swirling chamber is of frusto-conical shape as can be seen from Fig. 1.

The jet is assembled by dropping the part 2 into the chamber 7 of the portion 3 with the grooved face uppermost. The part 1 is then placed on top of the part 2 so that the swirling chamber is in alignment with the groove 8 and the knurled cap 6 is then screwed on the socket. A ring 13 of resilient material prevents damage to the parts 1 and 2 due to excessive pressure if the cap 6 is screwed on tightly and at the same time the ring provides an effective seal.

In operation the material or fluid to be

sprayed passes through the lower part of the socket and enters the inclined passages 9 and 10. On emergence therefrom, the material formed into two streams, impinges obliquely on the sides of the swirling chamber 12 and the streams are given a rotary movement. The resultant discharge from the orifice 11 is of conical shape with the orifice at the apex of the cone.

In a modification of the part 1 the swirling chamber 12 has a cross section as shown in Fig. 4, the frusto-conical portion having a cylindrical-lead-in 14. This shape of swirling chamber produces a spray which is less fine than that produced by the swirling chamber shown in Fig. 1. Swirling chambers having other cross sections may be used to give sprays with different degrees of atomisation.

The parts 1 and 2 may conveniently be of ceramic but other material may be used and it will be understood that the metal socket may take forms other than that described.

What we claim is:—

1. A spray jet having a first part formed with a swirling chamber having a single central outlet orifice and a second part having at least two inclined passages for directing streams of a substance or fluid to be sprayed obliquely on to the walls of the swirling chamber, the cross sectional area of each passage decreasing towards the swirling chamber, the passages terminating in a groove in the second part, said groove being adjacent the swirling chamber.

2. A spray jet according to claim 1 in which the cross section of the swirling chamber is of frusto-conical shape.

3. A spray jet according to claim 1 in which the cross section of the swirling chamber is as shown in figure 4 of the accompanying drawings.

4. A spray jet substantially as described and illustrated with reference to figures 1, 2 and 3 of the accompanying drawings.

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PROVISIONAL SPECIFICATION

Improvements in or relating to Spray Jets

We, GEO. BRAY & COMPANY LIMITED, a British Company, of Leicester Place, Blackman Lane, Leeds, 2, and CHARLES HARRY HUGHF, a British Subject, of 10, Parkland Gardens, Meanwood, Leeds, 6, do hereby declare this invention to be described in the following statement:—

This invention relates to spray jets and has particular although not exclusive reference to jets for spraying fluids, smoke and dust.

An object of the present invention is to provide a jet having a high degree of atomisation and a substantially even distribution.

According to the present invention a spray jet has a single exit orifice the flow to which is given a rotary movement so that the jet produced is of conical shape having the single orifice at the apex.

In one particular jet according to the invention the single orifice is formed in a first part of the jet while a second part has at least two drillings each arranged to produce streams which impinge obliquely upon the internal wall of a cup-like recess in the first part. The streams are thus given a rotary movement and produce a jet which emerges from the orifice in the form of a cone.

In order that the invention may be more clearly understood one form of jet constructed in accordance therewith will now be described in more detail by way of example.

The jet is in two parts of which the first is disc-shaped with one major surface slightly raised and the other formed with a central cup-like recess. The raised surface is drilled centrally to provide the exit orifice, the passage formed by the drilling communicating at one end with the cup-like recess.

The second part of the jet is of approximately frusto-conical form with one face grooved diametrically. The groove, which is of V-shaped cross section does not extend completely across the base and covers a superficial area which is only slightly greater than that of the recess in the first part. The conical portion of the second part has two passages drilled in it which terminate at one end in the groove referred to above. The entrances to the two passages are in diametrically opposite sides of the cone and the diameter of each passage decreases as the latter approaches the groove in order to increase the rate of flow through the passages. The passages are inclined upwardly from the apertures and outwardly towards the periphery of the grooved face of the second part so that they terminate at the opposite ends and on the opposite sides of the groove.

The parts are assembled with the face of the disc having the cup-like recess in contact with the grooved face of the other part and both parts are mounted in a metal socket which may be attached to a supply conduit. The parts may be secured

in the socket by rolling one edge of the latter over the edge of the disc shaped part. Alternatively, a union nut may be used thus facilitating dismantling for cleaning.

The material or fluid to be sprayed passes through the tube and into the inclined passages. On emergence therefrom, the material, formed into two streams, impinges obliquely the curved sides and base of the recess and the streams are given a rotary movement. The resultant discharge from the single orifice is of conical shape with the orifice at the apex of the cone.

The two parts may be of any suitable material, e.g., ceramic and a single piece construction may be adopted.

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742,104 COMPLETE SPECIFICATION

1 SHEET

This drawing is a reproduction of the Original on a reduced scale.

FIG. 1.

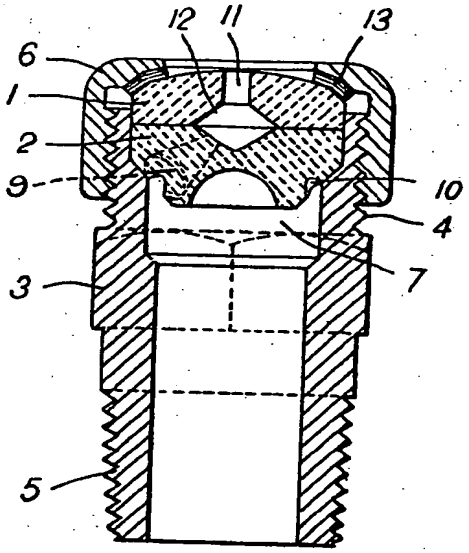

FIG. 2.

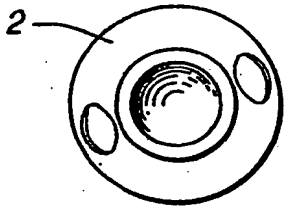

FIG. 4.

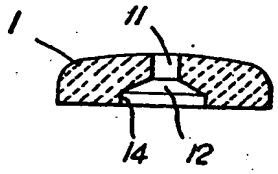

FIG. 3.